

## ABSTRACT OF THE DISCLOSURE

A method is provided for measuring by ionization mobility spectrometry (IMS) relatively high concentrations of water in argon, hydrogen, nitrogen and/or helium, including the following steps: (a) introducing the gas to be analyzed into an IMS instrument with a counter-flow of pure 5 gas; (b) obtaining a signal variable over time and proportional to the number of ions detected by an ion detector of the IMS instrument; (c) determining two time intervals (A, B) corresponding to the drift times in the IMS instrument of the  $\text{H}_3\text{O}^+$  and  $(\text{H}_2\text{O})_2^+$  ions; (d) obtaining the peaks of the signal in the two determined time intervals (A, B); and (e) calculating the water concentration in the gas to be analyzed according to the ratio between the intensity of the two peaks obtained in the signal.